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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/295,676	04/21/1999	HILLEL GAZIT	04/119801	7459

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DOUGLAS M CLARKSON
1720 FIRESIDE PLACE
ALPHARETTA, GA 30004

EXAMINER

FERRIS, DERRICK W

ART UNIT	PAPER NUMBER
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2663

DATE MAILED: 06/13/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/295,676

Applicant(s)

GAZIT, HILLEL

Examiner

Derrick W. Ferris

Art Unit

2663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 April 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 April 1999 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. **Claim 9** is objected to because of the following informalities: a claim should only contain one period at the end of the claim unless used for abbreviation (see MPEP 608.01(m)). Thus please remove the period between “a.)” and “b.)” Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. **Claims 4, 8,9 and 14** are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In the written disclosure Applicant presents two general concepts and attempts to apply these concepts to a respective method. Although these methods may be used in combination, as applicant does using the claimed subject matter, for the purpose of clarification in this rejection each method will be mentioned separately. The first general concept disclosed on pages 9-10 (and figures 1 and 2) discloses that increasing a time stamp by a constant T (i.e., predetermined value) increases the buffer size to a “higher level” which prevents underflow in

Art Unit: 2663

the buffer (e.g., a decoder buffer). Applicant applies this concept to a method by stating that the timestamp is the presentation time stamp (PTS) and decoding time stamp (DTS) for each packet (presumably a Packetized Elementary Stream (PES) packet for MPEG). It is also later revealed, that this “predetermined value” should be applied using this method by emulating a decoder’s buffer level before the stream is transmitted to the actual buffer [page 11, lines 2 and 3] thereby determining if an underflow could occur and should that underflow occur to then apply the first method.

Applicant’s second disclosed concept and method on pages 11-13 and figure 3 provides another mechanism for preventing underflow in addition to adjusting a time constant which is to remove null packets prior to transmitting the packets to the decoder buffer. Applicant discloses that removing null packets from a stream that would have ordinarily maintained a low memory level permits an earlier splicing to occur in a subsequent stream which in turn prevents a potential buffer underflow [page 13]. It is also noted that applicant does not clearly mention that the formula presented on page 12 is the formula for removing null packets (one has to draw an inference in order to make this logical connection since applicant mentions removing packets in general and not specifically null packets). However, for this second method there is a distinct difference between determining whether an underflow will occur in a decode buffer and preventing an actual underflow. Applicant does not provides information for the former on determining if an underflow will occur (for a first time) using null packets and also lacks sufficient information in enabling one skilled in the art to prevent an underflow from occurring, which is what applicant is claiming in **claim 9**. Applicant presents an example shown in Figure 3 [pages 11-13] describing what happens if an underflow is detected as illustrated using point 60

Art Unit: 2663

shown in the figure. Should detection occur, null packets are removed where as applicant claims, this avoids a potential buffer underflow [page 13, line 1]. However, this may or may not avoid a potential buffer underflow problem. Applicant fails to take into consideration that removing null packets may not be enough to prevent underflow in a buffer (i.e., applicant does not provide enough information to enable someone to use the formula presented for finding the maximum number of packets, assuming this formula is to be used for finding the maximum number of null packets as stated in **claim 8**). What happens in this case? Furthermore, Examiner is requesting further clarification on the formula presented in claim 8 as Examiner cannot see how this formula would work given the scenario of a 188 byte long packet with 4 byte header for a PES transport packet (assuming no adaptation field) where the buffer size is 2048 bytes and there are currently 8 packets in the decoder buffer and only 3 null packets are present in the stream. According to Examiner's interpretation of specification using this example, if there are 8 packets currently in the decoder buffer (i.e., not predetermined but already in the decoder buffer), then the current size of the decoder buffer should be $8 \times (188 - 4)$ or 1472 bytes which means B-X should equal 576 bytes (of current underflow) and the maximum number of null packets to be deleted, N, should be $576 / 184$ or 3.13 packets, such that 3.13 packets are to be deleted if possible from the stream before it hits the current buffer, assuming of course that the reason for removing the null packets is to prevent underflow which is not stated in the claim. Unless Examiner has misconstrued something, Examiner does not see how deleting 3.13 packets will avoid a potential underflow given this scenario and using the context provided in the specification.

As to providing enough information for presenting underflow, it is furthermore noted that applicant does not mention “recomputing” an earlier splice time (claim 9, line 13) or enabling one skilled in the art on how to recompute an earlier splice time given the current scenario and set of constraints. In other words this second method, as disclosed by the applicant, performs an “emulation” prior to the transmission of the decode buffer. From this a calculation is performed to determine whether underflow will occur. If an underflow occurs then the next step is to remove an undetermined number of null packets. Nothing more is disclosed by applicant in the specification after this in order to prevent an underflow (it is left to the discretion of the reader for example to figure out what applicant means by recomputing). Hence one skilled in the art at the time of the invention cannot enable this second method given the limited subject matter as set forth by the specification. Therefore, claims 9, is not enabled.

Finally **claim 4, 9 and 14** are not enabled because Applicant does not disclose (in the written disclosure) processing prior to multiplexing other then the Background mentioning a problem but giving no solution (it is noted that Applicant could insert the additive means of multiplexing into the written disclosure since said means is mentioned in the claim(s) as long as the Applicant does not exceed the scope as mentioned in the claim(s)).

5. **Claims 1, 5, 8, 9, 11, 12 and 13** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to **claims 1 and 12**, a person of ordinary skill in the art would not know when and how to apply the method claimed since it is not until claim 3 and 5 for claim 1, or 13 and 14 for claim 12, when one learns when to go about obtaining a “predetermined size”,

before transmission to the decoder buffer, and how one goes about getting a predetermined size, through “emulation”. Thus claims 1 and 12 are considered indefinite as written. This also begs the question on what is meant by “emulating” since this term is not defined in applicant’s specification as pointed out in the next rejection.

As to **claims 5, 11 and 13** it is unclear what Applicant means by “emulating” or “emulation” as is it not clearly defined in the specification mentioned on page 11, line 2.

Claim 8 refers to itself as the base or parent claim. Examiner assumed applicant meant claim 1 instead of claim 8 as the parent or base claim. In addition, “said buffer level” (line 1) lacks proper antecedent basis. Examiner also does not see the relationship that null packets have with respect to the base claim (i.e., any claims 1-7 for that matter).

Claim 9 is indefinite for failing to specify with what respect transmission is to occur after emulation. Although the written disclosure notes this is prior to transmission to a decoder [page 11, line 3], this is not specified in the claim.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 1-7 and 9-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,894,328 to Tahara et al. in further view of U.S. Patent No. 6,038,00 to Hurst, Jr using “MPEG-2: A Tutorial Introduction to the Systems Layer” by P A Sarginson as a reference.

Examiner has made some assumptions due to the previous 112 rejections in order to make the following rejection(s).

As to **claims 1, 3, 4, 5, 9, 11, 12, 13, and 14**, it is well known in the art that a program comprises one or more elementary streams where an elementary stream is the name given to a single, digitally coded component of a program, for example coded video or audio. Each of these elementary streams is typically converted into a Packetised Elementary Stream (PES). Each PES-packet in a stream may vary in length and contain a PES-packet header. Within the header, the setting of flags 'P' and 'D' indicates that a respected Presentation Time Stamp (PTS) and Decoding Time Stamp (DTS) is present where it is well-known in the art that time stamps are a mechanism to ensure correct synchronism between elementary streams in a decoder [P A Sarginson, page 4/4]. As pointed out by Tahara et al., these time stamps can also be used to represent different aspects of the system when decoding depending on which standards are used such as ISO 11172-1, ISO 11172-2 and ISO 11172-3 [column 2, lines 56-67; column 3, lines 1-15]. Thus it is no surprise that Tahara et al. discloses that a time stamp may be used for input/output control of each buffer (e.g., decode buffer). This is exemplified in figure 5, noting the occupied buffer amount (i.e., decoder buffer of a predetermined size), if the DTS1 time is smaller than the value of SCR2, the picture VF1 cannot be extracted at time DTS1 causing a buffer underflow problem. Thus it also comes as no surprise that Tahara et al. also discloses that within a multiplexer, each elementary stream could be time-divisionally

multiplexed with a suitable length, while the proper time stamp (i.e., PTS and DTS values) needs to be set on the multiplexed stream, for possibly preventing breakage in the buffer in the decoder, such as overflow or underflow [column 5, lines 28-33]. Therefore it is well known in the art at the time of the invention to recognize a potential data underflow for a said decoder buffer when said decoder is less than a predetermined size (step a).

However, it may not be clear from Tahara et al. on how to solve the problem by adjusting the DTS and PTS values specifically, only that a problem exists and that time slices in general may be used to adjust the problem (although it is also noted that certain values need to be calculated to avoid these problems [column 10, lines 56-67; column 11, lines 1-47]). Hurst Jr., however, also recognizes the problem of underflow [column 1, lines 47-51], and attempts to solve the problem by specifically adjusting the DTS and PTS values (thus creating a motivation for combining these references as whole). Hurst Jr. notes that there are several rate-control issues that need to be resolved with switching between various elementary streams or splicing these streams together [column 14, lines 63-64]. Specifically a rate control issue can cause an underflow problem due to timestamps in general and specifically the presentation time of decoded information frames [column 15, lines 12-22]. Finally, noted before by Hurst Jr., that altering the time stamps can control rate control problems. This includes the reprogramming of the presentation time stamps (PTS) and the decode time stamps (DTS) of the selected stream where the partial decoding and retiming the PTS and

Art Unit: 2663

DTS is performed by a PTS and DTS detection and retiming unit 366 to produce a PTS and DTS retimed stream [column 10, lines 30-50]. Thus the reference inherently teaches that adding a predetermined value to the presentation time and decode time avoids a potential underflow problem.

As to **claims 2, 6, 10** both Tahara et al. [column 1, lines 25-27] and Hurst, Jr. [column 1, lines 19-30] provide support for MPEG-2.

As to **claim 7**, it is noted that adding values to DTS and PTS would have been obvious (see rejection above). The reference (Hurst, Jr.) inherently teaches that the time to be added to these values must exceed the fill capacity of the decoder buffer in order to avoid underflow thus anticipating the concept illustrated in the formula.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derrick W. Ferris whose telephone number is (703) 305-4225. The examiner can normally be reached on M-F 9 A.M. - 4:30 P.M. E.S.T.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on (703) 308-5340. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 305-3900.

Application/Control Number: 09/295,676


Page 10

Art Unit: 2663

Derrick W. Ferris
Examiner
Art Unit 2663


DWF

June 11, 2002


MELVIN MARCELO
PRIMARY EXAMINER